RESOURCES AND POTENTIALITIES OF THE UPPER CHATTAHOOCHEE RIVER VALLEY

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PURPOSE OF STUDY

Far too many planning studies are undertaken today which merely compartmentalize a lot of unrelated facts. Numerous surveys are made annually which simply result in a new collection of data carrying no conviction, pointing no direction on the basis of the new findings.

This is the planning stage in which we find the Upper Chattahoochee River Valley area at the moment. It should not remain so for long. There are several development projects being planned for the valley in the near future. So it seems the right moment for a comprehensive study of the area which will utilize the many studies already completed by various city, county, state, federal and private organizations; a study which will have unity coming about because of a oneness of direction and a thorough analysis of what the pertinent facts could mean.

This thesis cannot be called the product of one mind. There have been many contributors who provided ideas, theories, research materials, and their valuable time. Their studies, combined in a related framework, should indicate a constructive trend for planning the Upper Chattahoochee River Valley in keeping with the best interests of the land and the people.

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* NOTE: These maps are the basic reference materials for detailed study throughout the thesis.

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INTRODUCTION

In a day characterized by technologists and specialists, planning offers a unique challenge to the student simply by the breadth of its domain. Perhaps a single research paper could creditably be written on any one of the varied aspects of planning which follow. But such aspects are only segments of the whole. They may be studied separately, but in the field of planning their importance lies in their relation to each other. It is only after a careful analysis is made of the various resources, be they natural, human or man made, that the planning problems become clear and distinct.

Since the beginning of time, water has been a priori to the existence of life. Concomitant with this, water has dominated all human existence. The early civilizations of Mesopotamia and Egypt are evidence of this fact. In the short life of this country, with very few exceptions, an entire nation has grown to maturity along the navigable streams, the harbors and the coastlines.

Preliminary examination makes Atlanta seem to be one of these exceptions, for while she is dependant upon the river for her potable water supply, her actual existence seems to have been dictated by the emergence of three railroad lines at a point slightly below what is now called "five points." Yet if railroads were the raison d'etre in 1845, that is no longer of paramount importance today.

Atlanta is in the process of spilling over her corporate limits at a rapid pace. Cities no longer need to depend upon concentration for their existence. In January of next year, the Chattahoochee River will become part of Atlanta's city limits. Already the Chattahoochee valley is furnishing sites for new industry, making the future of the valley extremely important. While it may always have held a great importance to some, it should now be the concern of all thinking individuals.

Man has not always been thoughtful of nature. Some of his activities in exploiting resources have been dangerously destructive. For example, his use of water has all but turned a friend into a rampaging enemy. Destruction of forrests leaving barren hillsides which rains can destroy by slow disintegration, removal of top soil fertility by poor agricultural methods, pollution of streams by excess and untreated sewage, attraction of too many wet industries thus making streams poisonous to aquatic life and unpotable to man, all of these and many more abuses make studies of our river basins of the utmost importance.

River basins are definable. They circumscribe areas for specific study. Without such limits the planner is at a loss to know how broad or small the research problem should be. Each watershed cannot be considered as a self containing unit irrespective of adjoining watersheds. On the contrary, each has an interlocking relationship. But the limitation of time narrows down the area of this study to the Upper Chattahoochee River Basin.

I

RESOURCES

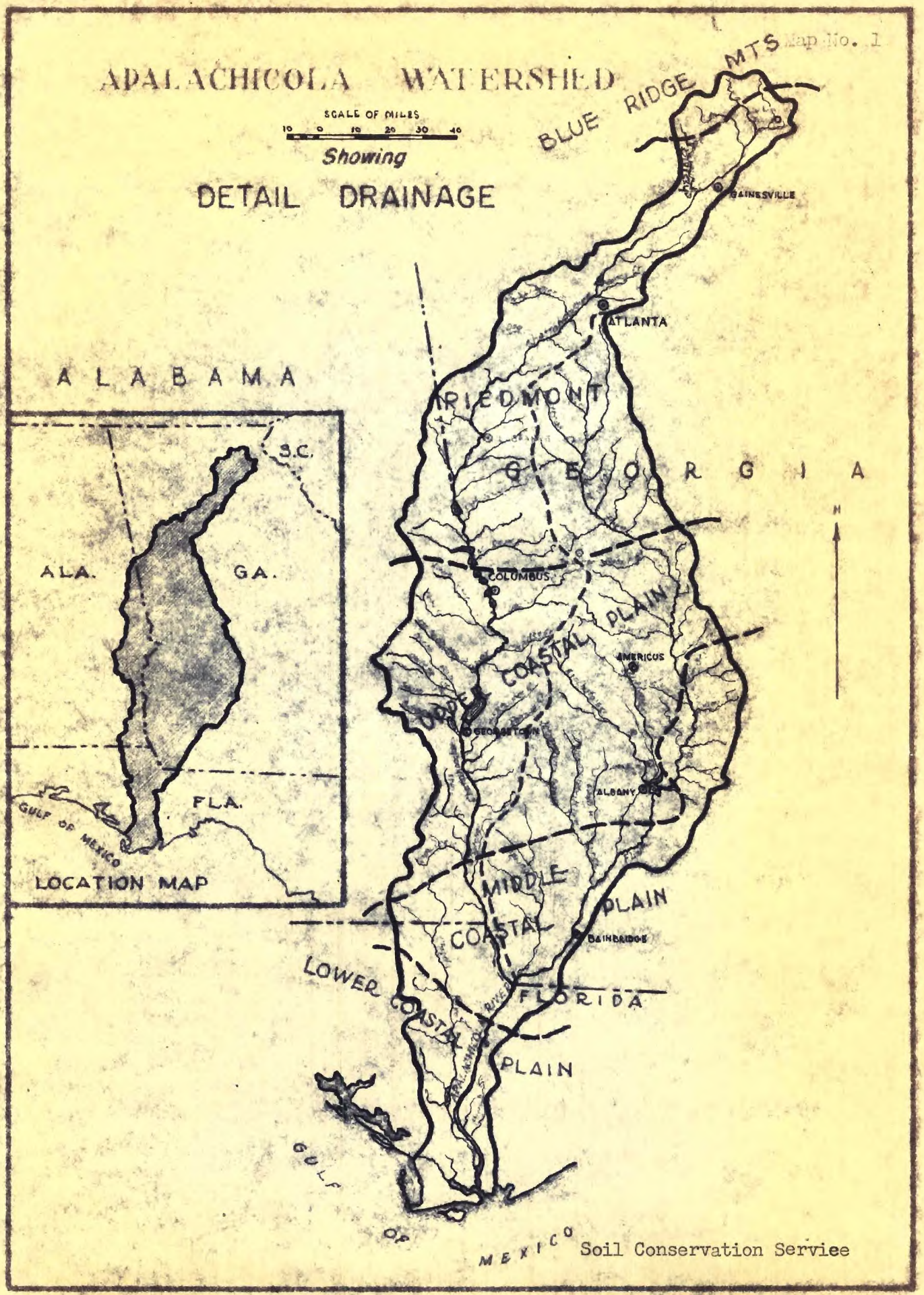
A. Natural

1. Geography

The Chattahoochee River has its origin in the foothills of the Blue Ridge Mountains at a point four miles South of Brasstown Ball Mountain. This places its mouth on Wolfpen Ridge in Towns County at an elevation of 4000 feet. Wolfpen Ridge actually forms the dividing line between the Apalachicola water basin and the Alabama-Coosa basin at their respective northern extremities. From the source of its existence to the Soque, a distance of 32 miles, the river has an average fall per mile of 89.0 feet for a total of 2851 feet. The entire length of the Chattahoochee measures 436 miles. This is the length from the source to Apalachicola River proper which is formed by the confluence of the two major tributaries, the Chattahoochee and Flint Rivers, occurring near River Junction, Florida. This is actually the Southwest tip of the State of Georgia. Map No. 1 shows this location with its major tributaries and physiographic divisions. From the confluence of the Chattahoochee and Flint rivers to the Gulf of Mexico the river measures 112.8 miles. The major basins to each side of the Apalachicola basin are the Altamaha and the Alabama Coosa.

Chattahoochee-Apalachicola System	Length Miles	Elevations	Fall	Average Fall Per Mile
Source to Soque River	32	4000 to 1149	2851	89.0
Mouth of Soque to Chestatee River	34	1149 to 980	169	4.98
Mouth of Chestatee to Buford Dam	16	980 to 918	62	3.88
Buford Dam to Vinings (Atlanta)	50	918 to 750	168	3.36
Vinings to Columbus	141	750 to 190	560	3.97
Columbus to Flint River	163	190 to 45	145	0.89
Flint River to Gulf of Mexico	112.8	45 to 0	45	0.402
Totals	548.8		4000	

Map No. 1



Soil Conservation Serviee

By reference to Map No. 1, page 4, it will be noted that of the 19,342[1] square miles (12,378,758 acres) of area drained by the Apalachicola system, 2,824 square miles are in Alabama, 2,635 square miles are in Florida and the remaining 13,883 square miles are in Georgia.[2] The Chattahoochee River has a drainage area of 9,484 square miles of which 6,828 square miles is located in Georgia.[3]

2. Topography

The head of the Apalachicola Basin lies within the Blue Ridge Mountains where undulating topography causes variences from 980 to 4768 feet in elevation. This land is rugged and precipitous in comparison to the topography for the rest of the state of Georgia.

The rest of the Upper Chattahoochee River Basin is comprised solely of the Piedmont Plateau. In fact, this plateau occupies fully one-third of the entire Apalachicola Basin and is greatly responsible for much of the tremendous silt deposits of the entire system. The Piedmont Plateau extends below Atlanta, Georgia, until it reaches the Pine Mountain district which rises several hundred feet above the general area. The entire plateau is hilly and undulating. There is so little level land that most agriculture was developed along the river banks whenever the river stretched out in occasional flat areas. The inter-stream areas are just as rolling and as the parent stream is approached the land becomes steep and broken.

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[1] U. S. Army Engineers show 19,500. These figures were planimetered from U. S. G. S. Base maps.

[2] Run-off and Waterflow Retardation and Soil Erosion Prevention for Flood Control Purposes (U. S. Department of Agriculture, Soil Conservation Service, Regional Office, Spartanburg, South Carolina, 1940), p. 1. (This report, not for public distribution, will not be out for 6 months.)

[3] Frederic R. Harris, Report on the Conservation and Utilization of Water Resources in the State of Georgia (F. R. Harris, Inc., Consulting Engineers, New York City, N. Y., 1945), p. 77.

The rest of the Apalachicola Basin is made up of the Upper, Middle and Lower Coastal Plains. Topography varies from almost flat land in the Lower Coastal Plain to undulating in the Upper Coastal Plain. In the Alabama Sector and eastward as the Chattahoochee is crossed the land goes from rough to gently sloping.

3. Geology and Soils

The geology and soils of the watershed occur in eighteen formations, groups or phases and makes one of the most facinating studies that can be found in any watershed.[4] The three major provinces, viz., Crystalline, Paleozoic and the Coastal Plain all have a direct bearing on the entire basin with possibly the Paleozoic being the least representative as it occurs only at the very northern tip of the basin around Brasstown Bald Mountain area. The Fall line which runs irregularly from Augusta through Macon to Columbus, Georgia, forms the southern boundary of the Crystalline area and the northern reach is terminated by the Cartersville Fault. This Crystalline Belt was classified forty years ago as pre-Cambian in age but today the meta-sediments and some of the more recent granites and volcanics which have injected the original shales, sandstones and limestones give the belt validity in both the pre-Cambian and Paleozoic age. The industrial potential of this ancient Crystalline Belt is better than average. Asbestos, chlorite, chromite, copper, corundum, feldspar, gold, granites, kyanite, marbles, mica, precious stones, pyrite, talc are just a few of the industrial minerals that are prominent.[5]

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[4]Geologic Map of Georgia, Georgia Division of Mines, Mining and Geology.

[5]Garland Peyton, Industrial Minerals of Georgia (Paper read to meeting of Georgia Academy of Science, Athens, Ga.), Georgia Geological Survey Bulletin #56, Atlanta, Georgia, pp. 1-2.

The Paleozoic Age had its importance as a producer of barite, bauxite, red iron ores, high content calcium and magnesium limestones, manganese, road materials, sand, gravel, shale, slate and tripoli.[6] Most of the Paleozoic rocks are highly folded into sharp anticlines and synclines and were faulted at the close of the Paleozoic era.[7] It is for this reason that the Appalachian present topography consists of the more resistant sandstones as ridges and the valleys consist of the non-resistant rocks such as limestone and shale. It is for this reason also that streams adjust themselves to the soft rocks of the valley rather than try to cross structural trends.

The Coastal Plain does not occur in the Upper Chattahoochee Watershed but since it does occur in the Appalachicola basin proper, it will be mentioned. Briefly, it lies south of the aforementioned Fall line and is the youngest geological province. It comprises about 50% of the Appalachicola Basin and about three-fifths the area of the entire state. The oldest exposed formation is the Fall line. By deep drilling it is possible to determine earlier Mesozoic formations which do show on the geologic map of Georgia but are actually not physically exposed. Kaolins occur along the eastern edge of the central part of the Flint watershed and constitute almost 80% of the total supply of white clays used in the United States. They are also used as coating and filling clays in the manufacture of china and whiteware. Kaolin is used in the manufacturing of refractories. Fullers earth located in Decatur County almost at the confluence of the Flint and Chattahoochee is of tremendous importance to this country and is fast becoming a big factor in the state's economy. It is used admirably for processing mineral oils. The Fullers earth

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[6] Ibid., p. 4.

[7] Ibid., p. 3.

which is not located in our basin but in Twiggs County which is in the central part of the Altamaha River Basin is used for clarifying animal and vegetable fats and oils.[8]

At the headwaters of Chattahoochee the cultivated areas are largely lowlands. The uplands are in forest. The Ashe and Porter soil series that predominated in this area have high absorption characteristics tending to prevent erosion. Where they are not eroded the friable to sandy loam surface extends down to a depth of from six inches to twelve inches.[9] Erosion has already occurred due to early attempts in Georgia history to cultivate on steep slopes after the lowlands had been farmed out and due also to the frequency of forest fires. See table I, p. 9, for the physiographic occurrence, relief, origin, physical characteristics and susceptibility to erosion of the twenty-five major soil series found in the Apalachicola Basin. The soil provinces were previously shown on Map No. 1, p. 4.

The Crystalline rocks of the Piedmont Plateau are responsible for the Cecil and Appling woil series being predominant. They have a friable and absorptive sandy loam or loam surface that ranges from eight to fourteen inches deep.[10] They are moderately erodible, but since the agricultural methods followed were without respect to the soil this area is in serious condition. The following photographs, numbers 1, 2 and 3, should be studied with Map No. 2, p. 13.

Due to poor internal drainage and the impervious heavy clay subsoils of this plateau the land now has reached a seriously eroded condition. In

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[8]Garland Peyton, op. cit., pp. 5-10.

[9]Run-off and Waterflow Retardation and Soil Erosion Prevention for Flood Control Purposes, op. cit., p. 3.

[10]Ibid., pp. 4-6.